In the Claims:

Please amend the claims as follows:

62. (Currently Amended) A method for cooling a semiconductor device having a thermal transfer surface area comprising:

growing a diamond film on a substrate in a deposition chamber by reacting gases suitable for diamond deposition in ~~a~~ plasma ignited in said deposition chamber, said plasma disposed adjacent to a growth surface of said substrate such that said plasma extends no further than about 5 mm from said growth surface of said substrate;

removing said diamond film from said substrate; and

thermally coupling a first surface of said diamond film to said thermal transfer surface area of the semiconductor device.

63. (Original) The method of claim 62 wherein growing said diamond film comprises growing a diamond film having an area larger than said thermal transfer surface area of the semiconductor device and further including:

dividing said diamond film into portions, at least one portion having an area matched to the thermal transfer area of the semiconductor device; and

wherein thermally coupling a first surface of said diamond film to said thermal transfer surface area of the semiconductor device comprises thermally coupling a first surface of said at least one portion of said diamond film to said thermal transfer surface area of the semiconductor device.

64. (Original) The method of claim 62 further including thermally coupling a second surface of said diamond film to a heat sink.

65. (Original) The method of claim 62 wherein thermally coupling said first surface of said diamond film to said thermal transfer surface area of the semiconductor

device comprises mechanically bonding said first surface of said diamond film to said thermal transfer surface area of said semiconductor device with a bonding material having a thermal conductivity greater than 0.1W/cm/°K.

66. (Original) The method of claim 65 further including mechanically bonding a second surface of said diamond film to a heat sink with a bonding material having a thermal conductivity greater than 0.1W/cm/°K.

67. (Original) The method of claim 62 wherein thermally coupling said first surface of said diamond film to said thermal transfer surface area of the semiconductor device comprises maintaining said first surface of said diamond film and said to said thermal transfer surface area of said semiconductor device in compression against one another.

68. (Original) The method of claim 67 further including maintaining a heat sink in compression with a second surface of said diamond film.

69. (Original) A method for cooling a semiconductor device having a thermal transfer surface area comprising:

growing a diamond film on a substrate in a deposition chamber, said diamond film characterized by a composite growth efficiency greater than about 0.003;

removing said diamond film from said substrate; and

thermally coupling a first surface of said diamond film to said thermal transfer surface area of the semiconductor device.

70. (Previously Amended) The method of claim 69 wherein growing said diamond film comprises growing a diamond film having an area larger than said thermal transfer surface area of the semiconductor device and further including:

dividing said diamond film into portions, at least one portion having an area matched to the thermal transfer area of the semiconductor device; and

wherein said thermally coupling said first surface of said diamond film to said thermal transfer surface area of the semiconductor device comprises thermally coupling a first surface of said at least one portion of said diamond film to said thermal transfer surface area of the semiconductor device.

71. (Original) The method of claim 69 further including thermally coupling a second surface of said diamond film to a heat sink.

72. (Previously Amended) The method of claim 69 wherein said thermally coupling said first surface of said diamond film to said thermal transfer surface area of the semiconductor device comprises mechanically bonding said first surface of said diamond film to said thermal transfer surface area of said semiconductor device with a bonding material having a thermal conductivity greater than 0.1 W/cm/°K.

73. (Previously Amended) The method of claim 72 further including mechanically bonding a second surface of said diamond film to a heat sink with a bonding material having a thermal conductivity greater than 0.1 W/cm/°K.

74. (Previously Amended) The method of claim 69 wherein said thermally coupling said first surface of said diamond film to said thermal transfer surface area of the semiconductor device comprises maintaining said first surface of said diamond film and said thermal transfer surface area of said semiconductor device in compression against one another.

75. (Previously Amended) The method of claim 74 further including maintaining a heat sink in compression with a second surface of said diamond film.

76. (Original) A method for cooling a semiconductor device having a thermal transfer surface area comprising:

growing a diamond film on a substrate in a deposition chamber by reacting gases suitable for diamond deposition in a plasma ignited with energy at a frequency greater than 50 MHz and a power of at least 50 watts at a powered electrode in said deposition chamber, said gases maintained at a pressure greater than 20 Torr, said substrate maintained at a temperature greater than about 700°C;

removing said diamond film from said substrate; and

thermally coupling a first surface of said diamond film to said thermal transfer surface area of the semiconductor device.

77. (Previously Amended) The method of claim 76 wherein said growing said diamond film comprises growing a diamond film having an area larger than said thermal transfer surface area of the semiconductor device and further including:

dividing said diamond film into portions, at least one portion having an area matched to the thermal transfer area of the semiconductor device; and

wherein said thermally coupling a first surface of said diamond film to said thermal transfer surface area of the semiconductor device comprises thermally coupling a first surface of said at least one portion of said diamond film to said thermal transfer surface area of the semiconductor device.

78. (Original) The method of claim 76 further including thermally coupling a second surface of said diamond film to a heat sink.

79. (Previously Amended) The method of claim 76 wherein said thermally coupling said first surface of said diamond film to said thermal transfer surface area of the semiconductor device comprises mechanically bonding said first surface of said

diamond film to said thermal transfer surface area of said semiconductor device with a bonding material having a thermal conductivity greater than 0.1 W/cm/°K.

80. (Original) The method of claim 79 further including mechanically bonding a second surface of said diamond film to a heat sink with a bonding material having a thermal conductivity greater than 0.1W/cm/°K.

81. (Previously Amended) The method of claim 76 wherein said thermally coupling said first surface of said diamond film to said thermal transfer surface area of the semiconductor device comprises maintaining said first surface of said diamond film and said thermal transfer surface area of said semiconductor device in compression against one another.

82. (Original) The method of claim 81 further including maintaining a heat sink in compression with a second surface of said diamond film.